Day 232	IGCSE 10-a-day
1 Work out the square root of 2.25×10^2. Give your answer in standard form.	
2 Two statues are mathematically similar. The heights of the statues are 8 cm and 28 cm. The smaller one has volume 200 cm^3. Work out the volume of the larger one.	
3 A curve has equation $y = 3x^2 + 2x - 8$. The gradient at the point P on the curve is -4. Find the coordinates of P.	
4 In one country, income tax is worked out like this: The first £12,500 of income is not taxed. The next £35,000 is taxed at 20%. All income above that is taxed at 45%. Beth earns £82,500 in a year. Work out how much income tax Beth pays.	
5 A stone block in the shape of a cuboid weighs 720 N. Its smallest face has area 800 cm^2. Its largest face has area 2,500 cm^2. Pressure = force ÷ area Work out (a) the greatest pressure and (b) the least pressure the stone block can exert on the ground, in N/m^2.	

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6 A sequence is defined by $u_{n+2} = u_{n+1} + u_n$. $u_1 = 7$ and $u_2 = x$. (a) Show that $u_5 = 3x + 14$. (b) Given that $u_5 = 41$, find x and hence work out u_8.	
7 $f(x) = \frac{4x + 5}{x - 4}$ where $x \neq 4$ (a) Show that $ff(x) = x$. (b) Write down $f^{-1}(x)$.	
8 The curve $y = -x^2 + x - 2$ and the line $y = -5x + 6$ intersect at two points A and B, where A has the smaller x coordinate. (a) Find the coordinates of A and B. (b) Find the gradient of the curve at A and at B.	
9 Simplify $\frac{2}{5 + \sqrt{10}} - \frac{3}{5 - \sqrt{10}}$ Give your answer with a rational denominator.	
10 $f(x) = x + \frac{4}{x}$ for $x > 0$ (a) Find the range of values of x for which f is a decreasing function. (b) Write down the least value of f(x).	